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EXAMINER	
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2629	

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/501,694

Applicant(s)

VAN DER VLEUTEN ET AL.

Examiner

Seokyun Moon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. The Applicants' arguments with respect to the amended claim 1 have been considered but are moot in view of the new ground(s) of rejection.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claim limitation, "*fabricating a bus structure on the first substrate*" disclosed in claim 18 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. **Claims 11-18** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As to **claim 11**, the claim discloses, “*fabricating a plurality of groups of pixel electrodes on a first substrate” and “*fabricating a plurality of IC circuits on a second substrate”.**

However, the Examiner respectfully submits that the applicants have failed to disclose or explain regarding the pixel electrodes in the specification of the instant application. Furthermore, according to figure 3 of the instant application, the substrate 3 can be construed as the “*second substrate*” disclosed in the claim since the IC chip 20 is fabricated on the substrate 3. In this case, the substrate 4 is construed as the “*first substrate*” disclosed in the claim. And if the substrate 4 is construed as the “*first substrate*”, then the electrode 6 can be construed as the “*pixel electrodes*” disclosed in the claim. However, it would not be obvious to one of ordinary skill in the art to refer the electrode 6 as a pixel electrode. In liquid crystal display technology, it is more common and widely known to refer electrode 6 as a common electrode and to refer electrode 5 as a pixel electrode.

For further examination purpose, the claim limitation, “*fabricating a plurality of groups of pixel electrodes on a first substrate*” will be interpreted as, “*fabricating a common electrode on a first substrate and having a plurality of groups of pixel electrodes*” for further examination purpose.

Appropriate explanation or correction is required.

As to **claim 12**, the claim discloses, “*detaching the IC circuit from the second substrate*”.

However, the specification of the instant application does not disclose or explain the disclosed claim limitation (note that claim 12 discloses detaching the IC circuit from the second substrate while claim 11 on which claim 12 depends discloses attaching the IC circuit on the second substrate).

Appropriate explanation or correction is required.

As to **claim 13**, the claim discloses, “*attaching a third substrate and a liquid crystal material that is disposed between the first substrate and the third substrate*”.

However, as discussed with respect to the rejection of claim 11 under 35 U.S.C. 112 1<sup>st</sup> paragraph, the substrate 3 and the substrate 4 of figure 3 of the instant application are the only components that can be construed as the “*second substrate*” and the “*first substrate*” disclosed in the claims, respectively. Therefore, the Examiner respectfully submits that neither the drawing nor the specification of the instant application discloses anything regarding a third substrate.

Appropriate explanation or correction is required.

As to **claims 14-18**, the claims are rejected as being dependent upon a base claim rejected under 35 U.S.C. 112 1<sup>st</sup> paragraph.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-8, 10-11, 14, and 16-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfgang et al. (DE Pub. No. 19950839) in view of Amagami et al. (US 5,402,149).

As to **claim 1**, Wolfgang teaches a display device (“*LCD*”) [pg 3 paragraph 5] comprising:

groups of pixels included within separate defined areas [pg 3 paragraph 8]; and

a plurality of semiconductor integrated circuit devices ("*IC chip 100*") that are fabricated on a second substrate ("*carrier substrate 20*") [fig. 9], wherein each semiconductor IC device is positioned within the defined area of an associated group of pixels [fig. 3].

Wolfgang inherently teaches the groups of pixels being included within separate defined areas on a first substrate since it is required for pixels or display elements of a liquid crystal display to be disposed between two substrates of the liquid crystal display, and thus the pixels or the display elements of a liquid crystal display are always included within separate defined areas on the two substrates of the liquid crystal display.

Wolfgang does not teach the semiconductor IC device, i.e. the display drive, being configured to receive image data based on a first resolution that is substantially independent of the display device and to drive pixels within the associate group based on a second resolution corresponding to the display device.

However, Amagami teaches an idea of having an intermediate value generating circuit [abstract lines 5-9] in a driver of a liquid crystal display [col. 1 line 9] so that the driver of the display is capable of receiving image data based on a first resolution ("*display data for a low-resolution matrix display apparatus*") that is substantially independent of the display device and driving pixels based on a second resolution ("*high-resolution*") corresponding to the display [abstract lines 1-5].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the drivers, i.e. the semiconductor IC devices, of the display of Wolfgang to include an intermediate value generating circuit so that the driver of the display of Wolfgang is capable of receiving image data based on a first resolution that is substantially independent of the display and driving pixels based on a second resolution corresponding to the display, as taught by Amagami, in order to allow the display of Wolfgang to display images correctly regardless of whether the resolution of received image data is same as or different from the resolution of the display.

As to **claim 2**, Wolfgang as modified by Amagami teaches the semiconductor IC device being configured to determine a degree of scaling (Amagami: “*expansion ratio*”) to be performed to effect an appropriate transformation from the first resolution to the second resolution [Amagami: abstract lines 1-9].

As to **claim 3**, Wolfgang as modified by Amagami teaches the semiconductor IC device providing two or more pixels within its associated group of pixels with a common data voltage [Amagami fig. 7, a plurality of pixels are driven with a common data voltage when the value L01 is equal to the value of L00].

As to **claim 4**, Wolfgang as modified by Amagami teaches the semiconductor IC device determining intermediate voltages for neighboring pixels [Amagami: abstract lines 5-9].

As to **claims 5 and 6**, Wolfgang as modified by Amagami teaches the semiconductor IC device determining intermediate voltages for pixels in neighboring columns and rows [Amagami: fig. 22].

As to **claim 7**, Wolfgang as modified by Amagami teaches the display device including connection (Wolfgang: “*bus connection 16*”) [Wolfgang: fig. 1] between neighboring semiconductor IC devices on the first substrate.

As to **claim 8**, Wolfgang as modified by Amagami teaches the semiconductor device being configured to detect changes between the contents of subsequent frames [Amagami: abstract lines 1-9; when the content of image data of a current frame has a resolution different from the resolution of the content of image data of a previous frame, the expansion ratio of the driver is adjusted or changed].

Wolfgang as modified by Amagami does not expressly teach the semiconductor IC device including a frame memory.

However, Examiner takes official notice that it is well known in the art to include a frame memory in a IC chip used as a driver in a display apparatus.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the drivers, i.e. the semiconductor IC devices of the display of Wolfgang as modified by Amagami to include a frame memory, in order to allow each of the drivers of the display of Wolfgang as modified by Amagami to store image data for a frame period temporarily

As to **claim 10**, Wolfgang as modified by Amagami teaches the display device including a bus structure (Wolfgang: “*bus connection 16*”) [Wolfgang: fig. 1] for communicating with the plurality of semiconductor IC devices (Wolfgang: “*IC chip 10*”).

As to **claim 11**, Wolfgang teaches a method of fabricating a display device (“*LCD*”) [pg 3 paragraph 5], comprising:

fabricating a plurality of IC circuits (“*IC chip 100*”) on a second substrate (“*carrier substrate 20*”) [fig. 9], and

attaching an IC circuit of the plurality of IC circuits to a corresponding group of pixel electrodes on the second substrate [figs. 3 and 9].

Wolfgang inherently teaches having a plurality of pixel electrodes and fabricating a common electrode on a substrate opposite to the substrate on which the pixel electrodes are located since it is required for any liquid crystal display to have two substrates opposite to each other and to include a common electrode on one of the substrates and a plurality of pixel electrodes on another one of the substrates, in order to control liquid crystals disposed between the substrates based on voltages applied across the common electrode and the pixel electrodes.

Wolfgang does not expressly teach configuring each of the IC circuits to scale image data based on a resolution of the display device and to drive each electrode of the corresponding group of pixel electrodes accordingly.

However, Amagami teaches an idea of having an intermediate value generating circuit [abstract lines 5-9] in a driver of a liquid crystal display [col. 1 line 9] so that the driver of the display is capable of



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scale image data based on a resolution of the display device ("*high-resolution*") and driving each of the electrodes accordingly [abstract lines 1-5].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the drivers, i.e. the IC chips, of the display of Wolfgang to include an intermediate value generating circuit so that the driver of the display of Wolfgang is capable of scaling image data based on a resolution of the display device and driving each of the electrodes of the corresponding group of pixel electrodes accordingly, as taught by Amagami, in order to allow the display of Wolfgang to display images correctly regardless of whether the resolution of received image data is same as or different from the resolution of the display.

As to **claim 14**, Wolfgang as modified by Amagami teaches configuring each IC circuit to receive information to facilitate determining the resolution of the display device [Amagami: abstract lines 1-9].

As to **claim 16**, all of the claim limitations have already been discussed with respect to the rejection of claim 3 (note that the common data voltage is provided to pixels through the corresponding pixel electrodes).

As to **claim 17**, all of the claim limitations have already been discussed with respect to the rejection of claim 4 (note that the intermediate data voltage is provided to pixels through the corresponding pixel electrodes).

7. **Claims 9 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolfgang and Amagami as applied to claims 1-8, 10-11, 14, and 16-17 above, and further in view of Ryan et al. (US 6,061,039).

As to **claim 9**, Wolfgang as modified by Amagami inherently teaches each of the semiconductor IC devices being configured to recognize a location of its corresponding group of pixels or display elements since it is required for each of the semiconductor IC devices to drive each of the groups of pixels

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or display elements with corresponding data voltages and thus, it is required for each of the semiconductor IC devices to recognize where the corresponding group of pixels or display elements is.

Wolfgang as modified by Amagami does not teach each of the semiconductor IC devices recognizing the location of its corresponding group of pixels or display elements based on at least one of a read-only memory structure or a programmable memory.

However, Ryan [fig. 9] teaches an idea of recognizing locations of pixels or display elements using addresses stored in read-only memory structures (“ROM 45”) implemented in semiconductor IC devices included in a display [col. 7 lines 59-60].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display of Wolfgang as modified by Amagami to include read-only memory structures storing addresses of the semiconductor IC devices in the semiconductor IC devices and to recognize the location of each of the semiconductor IC devices using the address stored in the read-only memory structure of the semiconductor IC device, as taught by Ryan, in order to allow the display of Wolfgang as modified by Amagami to access each of the semiconductor IC devices to be driven without accessing the semiconductor IC devices which are not to be driven (i.e. the advantage of memory addressing scheme over time sequential addressing scheme).

As to **claim 15**, all of the claim limitations have already been discussed with respect to the rejection of claim 9.

### ***Conclusion***

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hagiwara (US 6,774,968) teaches a structure of a liquid crystal display including a first substrate and a second substrate, wherein a common electrode is disposed on the first substrate and a plurality of pixel electrodes are disposed on the second substrate.

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9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

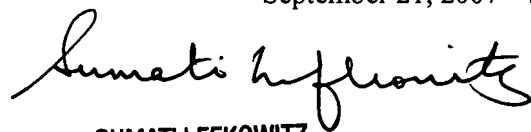
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (572) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

September 21, 2007 – s.m.



SUMATI LEFKOWITZ  
SUPERVISORY PATENT EXAMINER